

Part Two - Identification and Description of the Historic Resources

The first concept of a water crossing at this project location had been developed by the City (Wilmington) Water Commission. This involved submerging a water main across the Brandywine Creek. Planners and Engineers balked at this concept and decided to incorporate the large water pipe/main within a bridge, affording the pipe better protection as well as linking the two sections of Brandywine Park to make the Zoo and park areas more readily accessible. The cost of this combination, a roadway/carriageway and aqueduct, was \$40,000, paid according to a 1900 agreement: the Park's Commission paid for one-third of the cost and the Water Commission paid two-thirds. The two agencies which had cooperated in construction of the bridge continued to share jurisdiction over its maintenance until 1958, when the Park Board took full control. As of that date, an inspection of the structural analysis was undertaken by the State Highway Department indicated that the bridge required repairs and improvements estimated at \$200,000. The Department's inspection found the substructure in unexpectedly good condition, but recommended removing the deteriorated deck, sidewalks, and balustrades, and replacing the roadway with a modern, wider thoroughfare. In 1970, these plans were implemented. However, the modern, wider thoroughfare was not constructed as recommended. Instead, the roadway was widened 3'-0" by removing the curb and sidewalk on the east side; three sections of the southeastern balustrades were replaced.

According the original contract plans located in DelDOT archive files, work under the 1906 contract (BNK-7 or Contract No. 7) indicates that the deck should have consisted of a concrete deck. However, it was constructed with Belgian block, similar to the surrounding Brandywine Park Roads. The deck also originally consisted of two 8' lanes with two 4' sidewalks. Four fluted poles with globe lumination designs on top of the parapets were also detailed. Theodore A. Leisen was the Chief Engineer. Leisen was a consulting engineer working for Concrete Steel Engineering Company out of New York City.

In reference to all known documented repairs and bridge modifications, in 1958 a stress analysis was performed on the deck in order to assess the need for a wider/modern roadway width. This proposal called for keeping the piers and arches and replacing the deck with a profile that would consist of two 15' lanes and two 5' cantilevered sidewalks with metal parapet railings. The encased 48' water main would be abandoned in place, while two 30" pipes would be installed/encased adjacent to it. However, none of these ideas were incorporated.

In the summer of 1970, the deck and earth fill were removed, replaced, and resurfaced/laid over with select borrow, crusher run, Portland Cement Concrete, and

hot-mix. Catch basins were installed or replaced which would connect to storm drains for the city's combined sewer and storm water system. The deck profile (width), including the sidewalks and curb were reconstructed to accommodate two 10' travel lanes with one 4' sidewalk on the west side and a 1' barrier/curb was placed on the east side. Three entire sectional pieces of balustrade parapet were replaced at the southwest end. Concrete guardrail and wire and post were replaced with cable stay guardrail and posts. The bridge was also painted with a barrier sealant coating.

In 1980-81, the bridge was cosmetically repaired with gunite to prevent spalling and further cracking. The bridge was cleaned by sandblasting. It was repainted with two coats of gray paint. Other repairs included: a partial concrete facelift through parging and patching the spalling arches, piers, parapet railing, stairways, wingwalls, and vertical facing of the east and west sides. All exposed faces of concrete were treated with a bonding agent before the pouring of fresh concrete. The hot-mix deck was removed and resurfaced. Cable stay guardrail and bullions were also removed and replaced with brown wooden guardrail and posts. Original lighting and poles were removed and replaced with a more conventional, modern fixture.

In March of 1984, \$4,800 was spent to repair the damaged southwest parapet corner of the bridge. Specifically, these repairs included: reattaching existing posts to their base, constructing new posts and attaching them to their base, repair of the southwest walls and rails with formed concrete to match the existing walls, doweling the existing walls and bases with #4 rebar 24" long with approximately 12" spacing, replacement of 6 missing balusters to match existing, replacement of sectional damage of bridge railing, application of an epoxy bonding agent to bond all connections between new and existing concrete, and painting of all new concrete to match existing.

A 1991 routine and temporary maintenance repair included repair of cracks, spalls, and leaching. More specifically, various spalled areas on curb, sidewalk, and encasement were repaired. Other work included repair of hot-mix pavement at approaches and temporary repair of spalls and unsealed cracks at various locations.

In the winter of 1996 emergency maintenance was performed on the deck due to outward skewing of the outside spandrel walls. This work included temporarily patching/sealing open cracked areas between the travel surface and sidewalk to prevent water seepage. Since January of 1996 the bridge has been closely monitored to ensure that walls or other cracked areas are not worsening.

In reference to the documented water line leaks on the bridge, the line, which is a major main, has been known to be leaking since 1978 at the bridge's north and south approaches.

In 1979 PVC pipes were drilled and installed within the outside arches to help percolation drainage from water main leaks and deck cracks.

In October of 1990, larger leaks developed in the 48" diameter water line. Two small holes were found near the invert of the pipe and were repaired without dewatering the pipeline. Approximately nine months later, a second leak occurred 150 feet away from the previous leak. The second leak, as described by City of Wilmington personnel, occurred in the lower half of the pipe within a pitted area approximately 2 feet by 2 feet.

Consultation with the Delaware State Historic Preservation Office (DE SHPO) indicates that the Van Buren Street Bridge is included within the Delaware Historic Bridge Survey and Evaluation as a bridge considered eligible to the National Register of Historic Places (N-1566). The structure was evaluated in a HABS/HAER Inventory between April and November of 1988. The DE SHPO has confirmed the bridge's consideration of eligibility in a December 23, 1991 Memorandum of Agreement which included a statewide inventory and evaluation of all bridge structures on Delaware. The HABS/HAER card is attached in Figure 3 for additional detail.

The Van Buren Street Bridge, itself, is the only inventoried example in Delaware of a multiple span solid spandrel, filled concrete arched bridge. The bridge is one of the earliest concrete bridges surveyed in Delaware. Among the first structures in Wilmington/the State to utilize the relatively new technology of construction, or "concrete steel" construction, the bridge represents an early example of this technology to a multiple span bridge set in a city park. The bridge demonstrates the aesthetic potential of the new material, as well as the versatility of design possibilities in the unobtrusive incorporation of a 48" water main within a monolithic structure. The Van Buren Street Bridge also has considerable technological significance, reflecting the variety of early 20th century concrete reinforcement types in its reinforcing scheme: beam reinforcement (latticed and Melan - type rolled I-beam) and bar reinforcement (Thacher bars).

In identifying the historic resource of the Brandywine Park, since Wilmington's pre and postindustrial development, areas along the banks of the Brandywine Creek have always been used for recreational purposes. In 1833, State Legislation introduced and passed a bill to provide for "Public Parks for the use of the citizens of Wilmington and vicinity." State Legislation also established a Board of Commissioners to take care and manage such parks, when acquired.

After the commission was established, the Board of Park Commissioners contacted Frederick Law Olmsted Sr. to review and consult possible park sites in and around Wilmington. He (Olmsted) recommended that the land along the Brandywine Creek be obtained for a park. By 1886, the Board of Commissioners had the funds to acquire the first lands of Brandywine Park. Other portions of the park have been since donated or acquired at later times.

HABS/HAER INVENTORY

See "HABS/HAER Inventory Guidelines" before filling out this card.

1. NAME(S) OF STRUCTURE

State Bridge Number 698

2. LOCATION

Van Buren Street over Brandywine Creek & Flume
Wilmington, New Castle County, Delaware

3. DATE(S) OF CONSTRUCTION

1906

4. USE (ORIGINAL/CURRENT)

Vehicular

5. RATING

CA

6. CONDITION

Fair: Spalling, cracking and calcium stains on arches, piers and abutments.

State Highway Bridge 698 (Van Buren Street Bridge) is a 353 feet long, eight span filled, solid spandrel concrete arch bridge and aqueduct. The spans vary in length, measuring 9'-0", 28'-0", 28'-0", 56'-0", 56'-0", 56'-0" and 33'-0". Arch reinforcement consists of I beams in the short spans and latticed, riveted girders in the long spans; Thacher bars reinforce the stairs and retaining walls. The bridge carries two lanes of traffic with a total horizontal clearance of 24'-0"; the concrete deck is supported on compacted fill over the arch ribs. The Van Buren Street Bridge is highly embellished, from the concrete substructure to the ornate balustrade. The bridge is topped with an ornate, urn-shaped concrete balustrade divided into sections which mirror the spans by dentilled shaft square columns and end posts. All piers are corbeled at the top and rounded below, while four are extended up through the parapet and topped with decorative light posts. The west wing walls serve as the base for a straight staircase that leads to the bridge deck from the park. At the stairs the parapet is extended to act as a railing and is decorated with incised geometric shapes. Square columns serve as the newels at the bottom of the stairs. When viewed in elevation, the detailed ornamentation is augmented by decorative arch rings which emphasize the arch structure, and the corbeled fascia. A marble bridge plate, located between spans 1 and 2 on the south elevation, documents the 1906 date of construction and lists the members of the Board of Water Commissioners and the Chief Engineer, Theodore A. Laseen.

Delaware Department of Transportation records state that Bridge 698 was built in 1906; original drawings are filed at the Department. The drawings indicate that the nationally prominent Concrete-Steel Engineering Company of New York served as consulting engineers; from 1901 to 1912, preeminent American engineer, Edwin Thacher, a reinforced concrete pioneer, was associated with the firm. Constructed as a joint project by the Water Commission and the Park Commission, the Van Buren Street Bridge was an integral part of a major project undertaken to improve the city's water supply. The concrete arches encased a pipe, 48 inches in diameter, carrying water across the Brandywine from Porter Reservoir on Concord Pike to the filter station at 16th and Market Streets. The first concept developed by the Water Commission involved submerging the water main across the Brandywine River. Planners decided to incorporate the large main within a bridge, affording the pipe better protection and linking two sections of Brandywine Park to make the Zoo more readily accessible to visitors. The cost of this combination highway bridge and aqueduct was \$40,000, paid according to a 1900 agreement: the Parks Commission paid for one-third of the cost and the Water Commission paid for two-thirds. The two agencies which had cooperated in constructing the bridge continued to share jurisdiction over its maintenance until 1958, when the Park Board took full control. At that date, an inspection of the structure undertaken by the State Highway Department indicated that the bridge required repairs and improvements totaling \$200,000. The Department's inspection found the substructure in unexpectedly good condition, but recommended removing the deteriorating deck, sidewalks, and balustrades, and replacing the roadway with a modern, wider thoroughfare. In 1970, the roadway was widened 3'-0" by removing the curb and sidewalk on one side; the existing balustrade was carefully preserved.

State Bridge 698 is the only example of a multiple span solid spandrel, filled concrete arch bridge. This highly embellished structure is also the earliest concrete bridge surveyed in the state. Among the first structures in Wilmington to utilize the relatively new technology of reinforced concrete, or "concrete-steel", construction, the Van Buren Street Bridge represents an early application of this technology to a multiple span bridge set in a city park. It demonstrates the aesthetic potential of the new material, as well as the versatility of design possibilities in the unobtrusive incorporation a 48-inch water main within this monolithic structure. The Van Buren Street Bridge also has considerable technological significance, reflecting the variety of early twentieth century concrete reinforcement types in its reinforcing scheme: beam reinforcement (both latticed and Melan-type rolled I-beam) and bar reinforcement (Thacher bars). Consulting engineers were the Concrete-Steel Engineering Company of New York City, which had achieved national prominence in the field of reinforced concrete bridge construction. In the decade ending in 1904, this company and its predecessors had constructed 300 reinforced concrete spans across the country. Among the American engineers who contributed to the development of reinforced concrete bridge technology during its formative period was Edwin Thacher (1840-1920), associated with Concrete-Steel Engineering Company from 1901 to 1912. Thacher became interested in steel-reinforced concrete construction in the late 1880s, and by 1895 had made this a specialty. He designed and constructed viaducts and bridges for leading southern railroads during the period 1889-1904. Also during this period, he became the western representative of Fritz von Emperger's company, and was instrumental in disseminating the Austrian engineer's technological innovations in the United States. Among Thacher's numerous patents are designs for deformed steel bar reinforcement, early examples of the reinforcement used in current design. The bridge drawings specify that Thacher bars were used as reinforcement in the stairs and buttresses of the Van Buren Street Bridge.

10. NAME(S) OF STRUCTURE

State Bridge Number 698

11. PHOTOS (W/ FILM ROLL & FRAME NO.) AND SKETCH MAP OF LOCATION

75A:27-36

76A:3-8



76A:3

Mack, Warren W. "A History of Motor Highways in Delaware", in Reed, Henry Clay, Delaware: A History of the First State, vol.2, pp.535-550 (NY: Lewis Historical Pub. Co., 1947).
Delaware State Program. Delaware State Highways: The Story of Roads in Delaware... [Newark, Delaware: Press of Kells, 1919].
Federal Writers' Project. Delaware: A Guide to the First State. (New York: Viking Press, 1938).
Spero, Paula A. C. A Survey and Photographic Inventory of Concrete and Masonry Arch Bridges in Virginia. (Charlottesville, Virginia: Virginia Highway & Transportation Research Council, 1984).
Wilmington Morning News, 20 March 1936.
Wilmington Evening Journal, 1 February 1958; 13 June 1958.

Delaware State Archives. State of Delaware, New Castle County Levy Court, Specifications, Proposals, Contract and Bond. ms., State Archives, Dover, DE.
Delaware State Archives. New Castle County Road Commissioners Papers, various years 1750-1940, ms. State Archives, Dover, Delaware.
Delaware DOT records: Contract files.

Plans on file at Delaware DOT: Contract #BNC-7, 70-05-002, 80-071-02

13. INVENTORIED BY:

AFFILIATION

DATE

P.A.C. Spero & Company with Kidde Consultants for Delaware DOT

April-November 1988

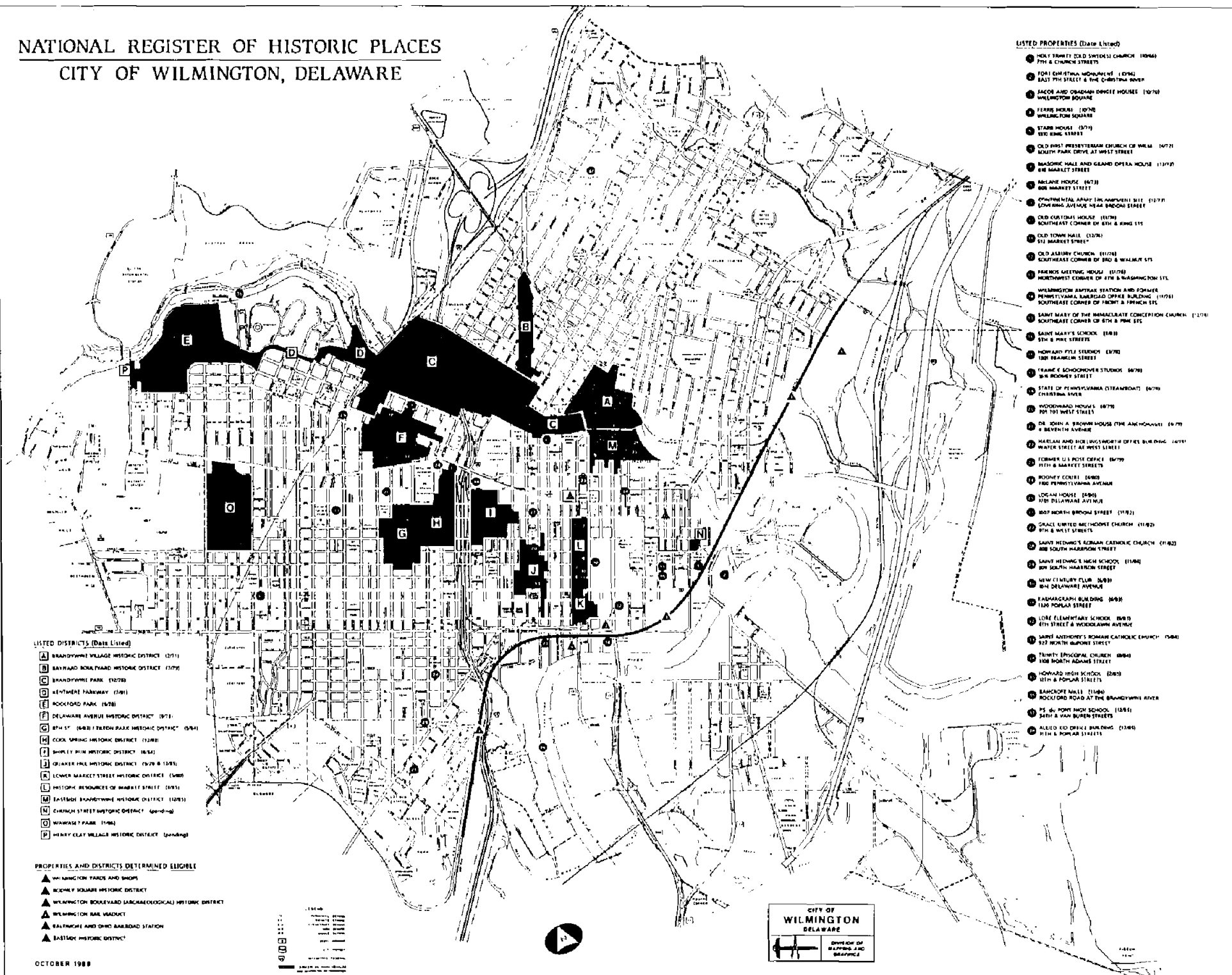
FIGURE 3

Samuel Canby, a local Wilmington engineer and surveyor, laid out the earliest plans and designs of Brandywine Park. In his consultation with Olmsted, Canby blended the park's natural topographic beauty with winding roads, paths, and walks. Of prime importance was the preservation of Brandywine creek and its millraces, a tribute to the park's landscape. Since its park establishment, many other memorials, buildings, structures, objects, and special events have been placed or planned in the park. The Van Buren Street Bridge is one such example.

The park today, as from its inception, is central to the recreational activities of Wilmington. The Brandywine Park's history is heavily advocated in its creation and layout by Frederick Law Olmsted Sr. who encouraged a naturalistic style in park and landscape development of open space. Olmsted, known internationally for his ideas and theories about park and open space design in cities, exerts a significant influence on the park's conception and layout.

As Wilmington's first public park, Brandywine Park was listed on the National Register of Historic Places December 22, 1976. An amendment to this district, extending the district's boundaries and park resources was approved in July 23, 1981. A map of Brandywine Park Historic District is illustrated in Figure 4.

NATIONAL REGISTER OF HISTORIC PLACES CITY OF WILMINGTON, DELAWARE



LISTED DISTRICTS (Date Listed)

- A BRANDYWINE VILLAGE HISTORIC DISTRICT (1971)
- B BAYWARD BOULEVARD HISTORIC DISTRICT (1979)
- C BRANDYWINE PARK (1978)
- D KENTMERE PARKWAY (1981)
- E ROCKFORD PARK (1978)
- F DELAWARE AVENUE HISTORIC DISTRICT (1971)
- G 8TH ST. (1800) EILEEN PARK HISTORIC DISTRICT (1984)
- H COOL SPRING HISTORIC DISTRICT (1980)
- I SHIPLEY PIN HISTORIC DISTRICT (1983)
- J QUAKER HILL HISTORIC DISTRICT (1979 & 1981)
- K LOWER MARKET STREET HISTORIC DISTRICT (1980)
- L HISTORIC RESOURCES OF MARKET STREET (1975)
- M EASTSIDE BRANDYWINE HISTORIC DISTRICT (1978)
- N CHURCH STREET HISTORIC DISTRICT (1980-82)
- O WAWASEE PARK (1980)
- P HENRY CLAY VILLAGE HISTORIC DISTRICT (1980)

PROPERTIES AND DISTRICTS DETERMINED ELIGIBLE

- ▲ WILMINGTON YARDS AND SHOPS
- ▲ ROCHER SQUARE HISTORIC DISTRICT
- ▲ WILMINGTON BOULEVARD (ARCHAEOLOGICAL) HISTORIC DISTRICT
- ▲ WILMINGTON RAIL VIADUCT
- ▲ BALTIMORE AND OHIO RAILROAD STATION
- ▲ EASTSIDE HISTORIC DISTRICT

LISTED PROPERTIES (Date Listed)

- 1 MEYER TRINITY (OLD SWEDISH) CHURCH (1966)
7TH & CHURCH STREETS
- 2 FORT CHRISTINA MONUMENT (1994)
EAST 7TH STREET & THE CHRISTINA RIVER
- 3 JACOB AND ORADIAN DWIGHT HOUSES (1970)
WILMINGTON SQUARE
- 4 FARRIS HOUSE (1970)
WILMINGTON SQUARE
- 5 STARR HOUSE (1971)
530 KING STREET
- 6 OLD FIRST PRESBYTERIAN CHURCH OF WILM. (1971)
NORTH PARK DRIVE AT WEST STREET
- 7 BARCLAY HALL AND GRAND OPERA HOUSE (1971)
616 MARKET STREET
- 8 ARLINE HOUSE (1973)
808 MARKET STREET
- 9 CYPRINE METAL ARMY ENCAMPMENT SITE (1977)
LOVING AVENUE NEAR BARCLAY STREET
- 10 OLD KURTZMAN HOUSE (1978)
SOUTHWEST CORNER OF 8TH & KING STS.
- 11 OLD TOWN HALL (1978)
511 MARKET STREET
- 12 OLD ALABAMA CHURCH (1978)
SOUTHWEST CORNER OF 8TH & WALNUT STS.
- 13 FRIENDS MEETING HOUSE (1978)
NORTHWEST CORNER OF 4TH & WASHINGTON STS.
- 14 WILMINGTON AIRPORT STATION AND FORMER
PENNSYLVANIA OVERROAD OFFICE BUILDING (1978)
SOUTHWEST CORNER OF 10TH & PINE STS.
- 15 SAINT MARY OF THE IMMACULATE CONCEPTION CHURCH (1978)
SOUTHWEST CORNER OF 8TH & PINE STS.
- 16 SAINT MARY'S SCHOOL (1978)
8TH & PINE STREETS
- 17 HOWARD PULP STATION (1978)
1801 BEACON STREET
- 18 FRANK E. SCHUCHOWITZ STUDIOS (1978)
304 ROBERT STREET
- 19 STATE OF PENNSYLVANIA STEAMBOAT (1978)
CHRISTINA RIVER
- 20 WOODWARD HOUSE (1978)
201 WEST STREET
- 21 DR. JOHN A. BROWN HOUSE (THE ANCHORAGE) (1978)
8 BENTLEY AVENUE
- 22 HARKAN AND RICE LONGWORTH OFFICE BUILDING (1978)
WATER STREET AT WEST STREET
- 23 FORMER U.S. POST OFFICE (1979)
10TH & MARKET STREETS
- 24 ROONEY CENTRE (1980)
100 PENNSYLVANIA AVENUE
- 25 LOGAN HOUSE (1980)
1001 DELAWARE AVENUE
- 26 805 NORTH BROAD STREET (1982)
- 27 GRACE UNITED METHODIST CHURCH (1982)
9TH & WEST STREETS
- 28 SAINT HENRY'S ROMAN CATHOLIC CHURCH (1982)
808 SOUTH HARRISON STREET
- 29 SAINT HENRY'S HIGH SCHOOL (1984)
808 SOUTH HARRISON STREET
- 30 NEW CENTURY CLUB (1983)
804 DELAWARE AVENUE
- 31 RADIOGRAPH BUILDING (1983)
1240 POPULAR STREET
- 32 LORE ELEMENTARY SCHOOL (1983)
8TH STREET & WOODLAWN AVENUE
- 33 SAINT ANTHONY'S ROMAN CATHOLIC CHURCH (1984)
322 NORTH WILSON STREET
- 34 TWENTY EPISCOPAL CHURCH (1984)
100 NORTH ADAMS STREET
- 35 HOWARD HIGH SCHOOL (1985)
10TH & POPULAR STREETS
- 36 BARCLAY HALL (1986)
ROCKFORD ROAD AT THE BRANDYWINE RIVER
- 37 PS. 46 PORT HIGH SCHOOL (1986)
34TH & VAN BUREN STREETS
- 38 ALICE KID DRINK BUILDING (1986)
1114 N. POPULAR STREET

Preservation Profile: Brandywine & Rockford Parks

Sites Worthy of Historic Designation

Frederick Law Olmsted's public parks created an oasis of rural ambience in the midst of sprawling cities. His design for Central Park in New York City in 1857 was his first project as a landscape planner and remains one of his most well known. His influence extended to Wilmington, where he influenced the formation and character of the City's park system in its infancy the 1880s. Support for a public park system began in the 1860s, when the City's expansion posed a threat to the favorite local picnic ground along the Brandywine Creek. A committee of five prominent citizens inquired into acquiring land along the Brandywine as well as land for a public square. However, the citizens of Wilmington did not approve the committee's suggestion to purchase land along the Brandywine, allowing only funds for a public square.

The interest in expanding the park system did not die, as a second committee, chaired by U.S. Senator Thomas S. Bayard, reported in 1869 that the Brandywine Valley provided the ideal elements for a park. This report motivated City Council to form a public park committee. However, the inaction of this committee in the 1870s caused William P. Bancroft, the father of Wilmington's park system, to garner support from influential citizens and lobby the State to pass the Park Commission Bill of 1883. The law gave the Mayor and Council the authority to spend \$10,000 per year to acquire land for parks. Bancroft offered to donate land outside the City limits. This influenced the legislation, to grant the City power to annex the area between the park and the City boundaries.

In a resourceful public relations move, the commissioners invited Mr. Olmsted to study the Brandywine site. In his

report he focused on the great natural beauty of the Brandywine River valley, now Brandywine Park. He urged that the City buy the land quickly, before it was lost. Olmsted also recommended that the commission accept Bancroft's offer of land for what is now Rockford Park. Both Olmsted and Bancroft believed in the salutary benefits of parks for city dwellers who lived in cramped conditions. By 1895 the Board commenced its work, assembling the needed acreage for and completing the development of Brandywine Park, Rockford Park, and Kentmere Parkway.

The United States Department of the Interior lists these three sites in the National Register of Historic Places. In addition, the City has designated Kentmere Parkway a historic district. As an example of landscape architecture, Brandywine Park stands as one of the finest in Delaware. Olmsted found the park to contain all the necessary elements for a beautiful park, such as trees, uneven grades, slopes, water, drives, walks, concourses, entrances, music stands, lawns, greens, and playgrounds.

Rockford Park's significance lies in William P. Bancroft's adoption of the philosophy of Frederick Law Olmsted. Bancroft strongly supported Olmsted's belief that open space was essential to the vitality of city dwellers. Even though scholars do not consider the Wilmington parks as significant Olmsted project, he did suggest the acquisition of Brandywine Park, devised a plan for Kentmere Parkway, and unofficially advised William Bancroft on the design for Rockford Park. □

(Article contributed by David Collins, Office of Planning Intern, 1991)

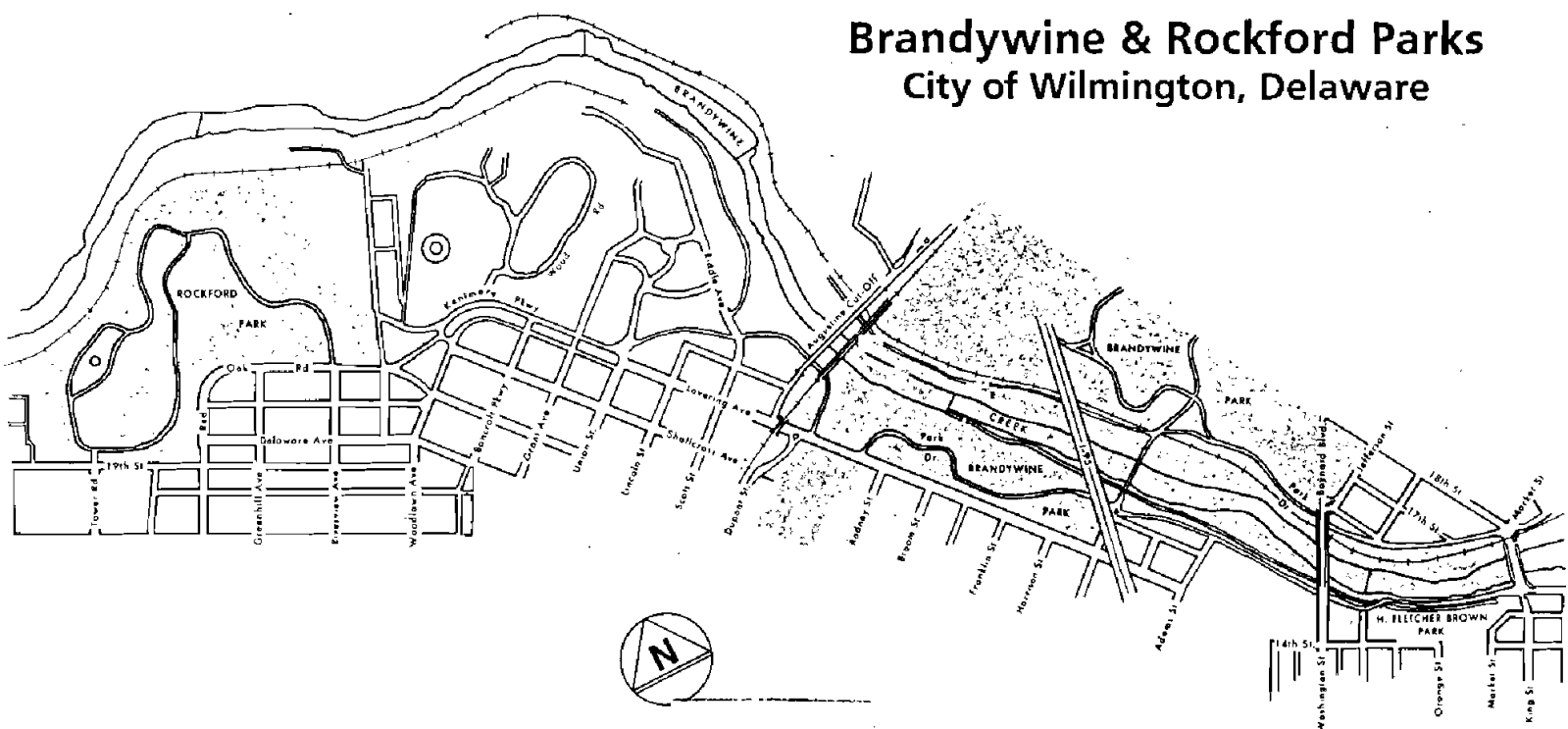


FIGURE 4